Abstract

This paper examines how armed conflict reshapes agricultural production decisions using new ground-truth and satellite evidence from Ukraine. We combine original field survey data collected in relatively secure areas, including georeferenced photographs and crop-type observations, with multi-temporal Sentinel-2 imagery to construct high-resolution measures of crop choice before and during the war.

Using a Random Forest classifier trained on a 16-week time series of spectral information at a 30 m $\times$ 30 m grid, we achieve a classification accuracy of 94.7% for single-year data and 87.1% when evaluated across multiple growing seasons.

Additionally, our analysis reveals some crop substitution, with 26 fields tracked across both years. In particular, sunflower cultivation declined substantially, while wheat emerged as the dominant destination crop in half of the single-crop transitions.

The results show that combining systematically verified field observations with satellite-based machine learning enables reliable agricultural monitoring, especially where standard survey methods cannot be implemented. This approach establishes a methodological basis for tracking crop choices and farmer adaptations in regions affected by conflict.